

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C. 20554

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In the Matter of

Preparation for International
Telecommunication Union World
Radiocommunication Conferences

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IC Docket No. 94-31

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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SUMMARY

TRW welcomes the opportunity to provide the Commission with its views on matters on the agenda of the next World Radiocommunication Conference ("WRC") and to make suggestions for matters to be addressed more fully at future WRCs. As an applicant in the Commission's ongoing MSS Above 1 GHz proceeding, TRW has a particular interest in the successful implementation of MSS globally.

The first agenda item for WRC-95 is the consideration of the Report of the Voluntary Group of Experts ("VGE"), which has proposed a major re-write of the Radio Regulations. While TRW agrees with the overall objective of the VGE efforts to remove unnecessary verbiage within the rules and to reduce regulatory burdens generally, both the Commission and its Industry Advisory Committee should undertake a careful review of the proposals to ensure that the substance of the regulations has not been changed in ways that could prove prejudicial to the United States.

TRW is particularly concerned by the proposal to adopt "Rules of Procedure" to be developed by the Radiocommunication Bureau. Such rules potentially impacting on the substantive rights of ITU member administrations must not be adopted without the prior approval of these affected parties. Indeed, the Commission itself justifiably questioned in its NOI whether it is acceptable to replace the current Resolution 46 coordination procedure for non-geostationary satellite networks, adopted at WARC-92, with the generic coordination procedure proposed by the VGE. Indeed, this particular proposal is not acceptable. Specifically, any new procedures adopted must provide for a defined period following posting for other administrations to ascertain definitively whether a potential conflict, and

need for coordination, exists -- with the rights of all other members to object extinguished at a date certain.

TRW also calls upon the Commission to recommend that the United States Government seek to modify or clarify at WRC-95 those provisions that would be most burdensome upon the development of MSS. The purpose of the rule changes adopted at WARC-92 was primarily to promote the introduction of global MSS, and the Footnotes to the Table of Allocations that were adopted at that time should be interpreted accordingly. Therefore, TRW proposes modification or clarification of Footnotes 731E and 753F, and the deletion of Footnote 733E. In addition, RR 2613 should be interpreted in accordance with the view adopted by the Negotiated Rulemaking Committee in CC Docket No. 92-166.

Moreover, it is evident that there is simply not enough MSS spectrum available at 1610-1626.5 MHz and 2483.5-2500 MHz to accommodate even the pending U.S. proposals for use of all or part of these frequencies, nor has sufficient spectrum been identified to accommodate feeder links for these systems. Additional demand for spectrum to provide MSS service is manifest in the prospect of future entry in these bands, including the potential development of MSS systems in other countries. Thus, it is imperative that additional spectrum bands be definitively identified for future MSS development and that the U.S. vigorously advocate these allocations at WRC-95.

Finally, whatever other items may emerge as potential matters for consideration in 1997, TRW believes that the ITU must reserve as much of the agenda for WRC-97 as necessary to resolve any and all lingering MSS matters from WRC-95, including but not limited to the allocation of sufficient additional spectrum to accommodate primary and feeder links for the service.

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COMMENTS OF TRW INC.

TRW Inc. ("TRW"), by its attorneys and pursuant to Sections 1.415 and 1.430 of the Commission's Rules, hereby responds to the Commission's Notice of Inquiry in the above-captioned docket pertaining to preparation for U.S. participation in upcoming International Telecommunication Union ("ITU") World Radiocommunication Conferences ("WRCs"). See Preparation for International Telecommunication Union World Radiocommunication Conferences, FCC 94-96 (released May 5, 1994) ("NOI").^{1/} TRW herein provides the Commission with its views on matters on the agenda of the next WRC, to be held in Geneva in November 1995, and makes suggestions for matters to be addressed more fully at upcoming WRCs in 1997 and 1999.

^{1/} Originally, comments in response to the NOI were due on June 6, 1994. However, on June 1, 1994, the FCC's Chief Engineer adopted an Order extending the deadline for initial comments until today, July 15, 1994, and the deadline for reply comments until August 5, 1994. See Preparation for International Telecommunication Union World Radiocommunication Conferences (Order), DA 94-566 (released June 2, 1994).

I. INTRODUCTION AND STATEMENT OF INTEREST

As the Commission indicated in the NOI, among the key issues that must necessarily be addressed at the 1995 World Radiocommunication Conference ("WRC-95") is facilitating the introduction of global mobile-satellite service ("MSS"). See NOI, FCC 94-96, slip op. at ¶ 1. As an applicant in the Commission's ongoing MSS Above 1 GHz proceeding, TRW has a particular interest in the successful implementation of MSS globally. See Application of TRW Inc. For Authority To Construct A New Communications Satellite System, File Nos. 20-DSS-P-91(12) and CSS-91-015 (filed May 31, 1991). Odyssey, the TRW MSS system proposal, is comprised of identical satellites in non-geostationary orbit (and associated ground segment), which will use radiofrequency spectrum in the 1610-1626.5 MHz and 2483.5-2500 MHz bands for primary communications links. These bands were allocated to the MSS world-wide on a co-primary basis at the 1992 World Administrative Radio Conference. TRW welcomes this opportunity to continue its participation in the development and advocacy of the proposals of the United States Government.

II. DISCUSSION

A. Final Report of the Voluntary Group of Experts (VGE)

The first agenda item for WRC-95 instructs the conference "to review the final report of the VGE, and to consider related proposals from administrations, in order to undertake, as appropriate, a revision of the Radio Regulations and to provide

a timetable for the implementation of outstanding recommended actions."^{2/} The Commission noted in the NOI that the objective of the VGE was to simplify the Table of Frequency Allocations and other portions of the Radio Regulations "without affecting significantly the substance of the regulations." NOI, FCC 94-96, slip op. at ¶¶ 6-7.

TRW agrees with the overall objective of the VGE efforts to remove unnecessary verbiage within the rules and to reduce regulatory burdens generally. Nonetheless, because the VGE has undertaken a complete re-write of the Radio Regulations, both the Commission and its Industry Advisory Committee should undertake a careful review of the proposals to ensure that the substance of the regulations has not been changed in ways that could prove prejudicial to the United States, or indeed to ITU member administrations generally.

For example, the Commission states in the NOI that "some matters of detail have been purposely left out of the body of the text" with the intention that these details will be covered instead by separate "‘Rules of Procedure’ to be developed by the Radiocommunication Bureau for adoption by the Radio Regulations Board." NOI, FCC 94-96, slip op. at ¶ 14. Thus, important procedural rules affecting the rights and obligations of administrations will effectively be removed from the direct oversight of ITU members. Such a course is not acceptable with respect to procedural

^{2/} ITU, Final Acts of the World Radiocommunication Conference, Resolution No. [COM4/1], Agenda for the 1995 World Radiocommunication Conference (Geneva, 1993) (Attachment 1 to NOI).

changes that will directly impact substantive rights. Accordingly, any procedural provisions that impact such rights must be subject to initial ratification by the full ITU membership.

For example, the Commission justifiably questions whether it is acceptable to replace the current Resolution 46 coordination procedure for non-geostationary satellite networks, adopted only two years ago at WARC-92, with the generic coordination procedure proposed by the VGE. TRW believes some of the VGE proposals are unacceptable. For example, those proposing networks of non-geostationary satellites, the requirement to notify all administrations "potentially affected" by a proposed system would render it necessary, as a practical matter, to notify and coordinate with every administration -- each of which, in turn, would be permitted to take into account planned assignments in assessing the impact of the proposal. As the Commission noted "this could be an impossible undertaking." NOI, FCC 94-96, slip op. at ¶ 14 n.9.

Unfortunately, the alternative of requesting that posting in the Weekly Circular constitute a request for coordination is equally unsatisfactory because the VGE proposal does not provide a definitive cut-off of other administration's rights in the event that an administration does not respond -- i.e., in order to have certainty, the posting administration would not only have to successfully coordinate with all members that affirmatively raised potential interference concerns, but would also have to receive evidence that all administrations that failed to respond did not object to the proposal. Thus, the procedures adopted must provide for the publication of system

proposals, followed by a defined period for other administrations to ascertain whether a potential conflict, and need for coordination, exists -- as well as providing for the extinguishment of all other members rights to object after the passage of a date certain.

B. Mobile-Satellite Services

As the Commission emphasized in the NOI, the successful establishment of global non-geostationary MSS systems will promote the creation of a new industry in the United States which, in turn, will foster a variety of new employment opportunities. See NOI, FCC 94-96, slip op. at ¶ 19. There can be no doubt that the market for MSS systems has vast potential. TRW therefore urges the Commission to take steps to secure additional spectrum allocations for MSS at WRC-95, working with interested parties such as TRW to determine which frequency bands are best suited for expansion of the non-geostationary MSS systems that will occupy the 1610-1626.5 MHz and 2483.5-2500 MHz bands. At the same time, the Commission should work to eliminate unnecessary regulatory constraints on the development of MSS in these bands.

1. The Commission Should Work To Eliminate At WRC-95 The Existing Technical Constraints Upon MSS Frequency Bands Allocated Below Three Gigahertz.

When the 1610-1626.5 MHz and 2483.5-2500 MHz bands were allocated to the MSS at WARC-92, certain conditions were imposed on the allocations across

the three ITU regions.^{3/} In the deliberations that took place during the existence of the Negotiated Rulemaking Committee ("NRC") in the CC Docket No. 92-166 rulemaking, differing interpretations of certain of these regulatory conditions emerged. Under some of the interpretations advocated, the ability of non-geostationary MSS systems successfully to be deployed in the bands could be substantially hindered. Accordingly, TRW calls upon the Commission to recommend that the United States Government seek to modify or clarify at WRC-95 those provisions that would be most burdensome upon the development of MSS.

Footnote 731E. One regulation that must be clarified is Footnote 731E, which provides, in pertinent part, that for the 1610-1626.5 MHz band:

A mobile earth station operating in [the MSS or the radiodetermination-satellite service] in this band shall not produce an e.i.r.p. density in excess of -15 dB(W/4 kHz) in the part of the band used by systems operating in accordance with the provisions of No. 732, unless otherwise agreed by the affected administrations. In the part of the band where such systems are not operating, a value of -3 dB(W/4 kHz) is applicable. Stations of the mobile-satellite service shall not cause harmful interference to, or claim protection from, stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. 732 and stations in the fixed service operating in accordance with the provisions of No. 730.^{4/}

^{3/} See Footnotes 731E, 731F, 733A, 733E, 753, 753C, and 753F to the International Table of Allocations.

^{4/} ITU, Final Acts of the World Administrative Radio Conference (WARC-92) (Malaga-Torremolinos 1992) ("Final Acts of WARC-92").

This provision has been subject to varying interpretations.^{5/} The Commission should advocate a U.S. position for WRC-95 that RR 731E be modified or clarified to reflect the fact that the operating limit of -15 dBW/4 kHz for MSS transceivers is intended to identify a threshold level of acceptable interference. The e.i.r.p. limits contained in RR 731E must thus be viewed as "trigger" values indicating when interference may be considered harmful. The footnote is not a means of down-grading the co-primary status of non-geostationary satellites operating in the 1610-1626.5 MHz band by requiring individualized coordination to determine whether "harmful" interference otherwise results when a system complies with the threshold. This fact must be clarified at WRC-95.

Footnote 733E. TRW also believes that the Commission should promote a U.S. position that Footnote 733E be deleted from the Radio Regulations as unnecessary. Originally, this footnote was adopted in order to protect radioastronomy service ("RAS") stations operating at 1610-1613.8 MHz in Regions 1 and 3 from any harmful interference that might be caused by operations in the radio-determination satellite service, which remains primary in these bands. With the elevation of RAS in these bands to co-primary status world-wide (along with MSS) at WARC-92, the

^{5/} Some, including the applicants for MSS systems in the 1610-1626.5 MHz band interpret this regulation as permitting MSS operations in this band, without regard to the final sentence of the quoted passage, where mobile earth stations are not producing an e.i.r.p. density in excess of -15 dBW/4 kHz (or in excess of -3 dBW/4 kHz where that value is applicable). A conflicting interpretation ignores the first two sentences quoted above and applies the obligation stated in the final sentence regardless of the e.i.r.p. densities produced. See Report of the MSS Above 1 GHz Negotiated Rulemaking Committee at 16.

footnote has become redundant. The level of protection originally intended by the footnote is now accorded to RAS on a global basis by virtue of its primary status, and the footnote should therefore be eliminated in order to preclude unwarranted claims that it entitles RAS locations to an additional measure of protection with respect to out-of-band emissions.^{6/}

Footnote 753F. Finally, the Commission should promote a U.S. government position that Footnote 753F be clarified at WRC-95. The regulation is confusing because it appears to both require non-geostationary systems to conform to the PFD limit in the footnote, while also providing for coordination if the PFD limit is exceeded. The ambiguity in this case results from the cross reference in Footnote 753F to Radio Regulation 2566. Despite the apparent contradiction between the rules, however, there can be no doubt as to their proper interpretation. The statement in RR 2566 that PFD emissions "shall not exceed" the listed values does not derogate from the language of RR 753F itself, which provides that the coordination is required only if the limits are exceeded.^{7/}

^{6/} For example, ITU RR 344 provides that ". . . protection from services in other bands shall be afforded the radio astronomy service only to the extent that such services are protected from each other."

^{7/} Compare RR 2566 and Footnote 753F. The second sentence of Footnote 753F reads as follows: "Coordination of space stations of the mobile-satellite and radio-determination satellite services with respect to terrestrial services is required only if the power-flux density produced at the earth's surface exceeds the limits in [RR] No. 2566."

The changes in the ITU regulations made at WARC-92 were designed to facilitate the use of the 2483.5-2500 MHz bands by non-geostationary systems, not to impede such use. The purpose of RR 2566 is simply to ensure that an MSS system's PFD "shall not exceed" the stated limits without prior coordination with other band users. Indeed, the Commission stated in allocating the frequency bands for the MSS Above 1 GHz service that the PFD levels applicable in the S-band "are to be used as a threshold to determine when coordination is required . . . with respect to terrestrial services."^{8/} This description appears to be fully consistent with the interpretation contained in the recent recommendation of the ITU's Radiocommunication Sector Task Group 2-2.^{9/} Thus, the Commission should endeavor to secure the adoption of the Task Group 2-2 view.

2. The Commission Should Recommend The International Allocation Of Additional Spectrum For Non-Geostationary MSS Systems.

As a result of the Commission's rulemaking proceeding in CC Docket No. 92-166, particularly the deliberations of the NRC in that proceeding, it is evident that there is simply not enough MSS spectrum available at 1610-1626.5 MHz and 2483.5-2500 MHz to accommodate even the pending U.S. proposals for use of all or part of these frequencies, nor has sufficient spectrum been identified to accommodate

^{8/} Amendment of Section 2.106 of the Commission's Rules to Allocate the 1610-1626.5 MHz and the 2483.5-2500 MHz Bands for Use By the Mobile-Satellite Service, Including Non-Geostationary Satellites, 9 FCC Rcd 536, 540 (¶ 23) (1994).

^{9/} Annex 1 to ITU Document 2-2/TEMP/3-E (Feb. 3, 1994).

feeder links for these systems. The NRC recognized that sharing constraints were presented by the need for MSS systems to avoid harmful interference to other users of the 1610-1626.5 and/or 2483.5-2500 MHz bands, including the radioastronomy community (at 1610-1613.8 MHz) and aeronautical radionavigation systems. See Report of the MSS Above 1 GHz Negotiated Rulemaking Committee, CC Docket No. 92-166, at 6-28 (April 6, 1993). Additional demand for spectrum to provide MSS service is manifest in the prospect of future entry in these bands, including the potential development of MSS systems in other countries.

Due to these constraints on already allocated spectrum, the U.S. government should pursue at WRC-95 the international allocation of suitable additional spectrum for use by non-geostationary MSS systems, including specific allocations for feeder links. In preparation for the conference, it is imperative that the spectrum bands identified by the Commission and the National Telecommunications and Information Administration be thoroughly evaluated to determine the long-term suitability of these bands for MSS use. See NOI, FCC 94-96, slip op. at ¶ 27 n.27 and Attachment 2 thereto. TRW is currently reviewing this issue and reserves the right to comment further as its evaluation proceeds.

3. The Commission Should Encourage The ITU To Adopt The Emerging U.S. Interpretation Of Radio Regulation No. 2613.

As the Commission noted in the NOI, the Report of the MSS Above 1 GHz NRC produced a consensus view that Radio Regulation No. 2613 must be clarified to assure that non-geostationary satellite operators are accorded equality with

geostationary fixed-satellite service operators. This is particularly applicable if these frequency bands are to be made available for MSS feeder links. See NOI, FCC 94-96, slip op. at ¶ 24.^{10/} Consistent with this view, TRW believes that the Commission should urge the United States Government to advocate the NRC's interpretation of Radio Regulation No. 2613.

The NRC recognized, as a result of a comprehensive review of RR 2613 and its purposes, that there are three necessary conditions that must be met before a non-geostationary system would be required to cease or reduce transmissions pursuant to RR 2613 in order to protect a geostationary fixed-satellite system:

(1) the administrations of the systems involve[d] must engage in bi-lateral or multi-lateral discussions and reach agreement as to a level of "accepted interference" (see RR 162); (2) after the systems are in operation, the non-geostationary system must exceed the level of interference agreed to; and (3) the interference in excess of the agreed level must be caused by the failure of the non-geostationary system to maintain sufficient angular separation between the satellites of the two systems.

^{10/} RR 2613 provides, in pertinent part, that:

Non-geostationary space stations shall cease or reduce to a negligible level their emissions, and their associated earth stations shall not transmit to them, whenever there is insufficient angular separation between nongeostationary satellites and geostationary satellites resulting in unacceptable interference to geostationary satellite space systems in the fixed-satellite service operating in accordance with these Regulations.

Final Acts of WARC-92, RR 2613 (footnote omitted).

Report of the MSS Above 1 GHz Negotiated Rulemaking Committee at 29. TRW was an active participant in developing this interpretation of RR 2613, and concurs fully with the NRC's Report on this matter.^{11/} TRW believes that the foregoing interpretation of the regulation, with its requirement of coordination between affected administrations, will provide existing non-geostationary satellite systems operating in bands shared with the fixed-satellite service with a necessary measure of protection against demands for cessation or reduction of transmissions pursuant to RR 2613. TRW urges the Commission and the United States Government to seek the world-wide adoption of this interpretation at WRC-95.

C. Agendas For Future World Radiocommunication Conferences

In the NOI, the Commission noted that "[i]t is possible that a considerable portion of the 1997 conference could be reserved (by WRC-95) for unresolved WRC-95 issues." NOI, FCC 94-96, slip. op. at ¶ 39. TRW agrees that, whatever other items may emerge as potential matters for consideration in 1997, the ITU must reserve as much of the agenda for WRC-97 as necessary to resolve any and all lingering MSS matters from WRC-95, including but not limited to the allocation of sufficient additional spectrum to accommodate primary and feeder links for the service. Thus, as the Commission suggests in the NOI, it may be necessary to delay

^{11/} Additional background on the Committee's interpretation can be found in Sections 4.1.3.2 and 4.1.4 of the Report of Working Group 3, which is included as Annex 3 to the Committee's Report.

consideration of some of the other items included on the preliminary agenda for WRC-97. See NOI, FCC 94-96, slip op. at ¶ 40.

III. CONCLUSION


For the foregoing reasons, TRW urges that the Commission undertake a thorough and careful review of the VGE Report to ensure that the substantive rights of ITU members are not altered thereby. The Commission should also endeavor to identify additional spectrum for allocation globally for non-geostationary MSS services, including feeder links, and should aggressively pursue the adoption of these allocations at WRC-95, and certainly no later than WRC-97. TRW also urges the Commission to advocate adoption of the interpretations of Footnotes 731E and 753F

(as well as the deletion of Footnote 733E) and the clarification of RR 2613 set forth above, which are essential to the development of nongeostationary MSS systems in the 1610-1626.5 and 2483.5-2500 MHz bands.

Respectfully submitted,

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